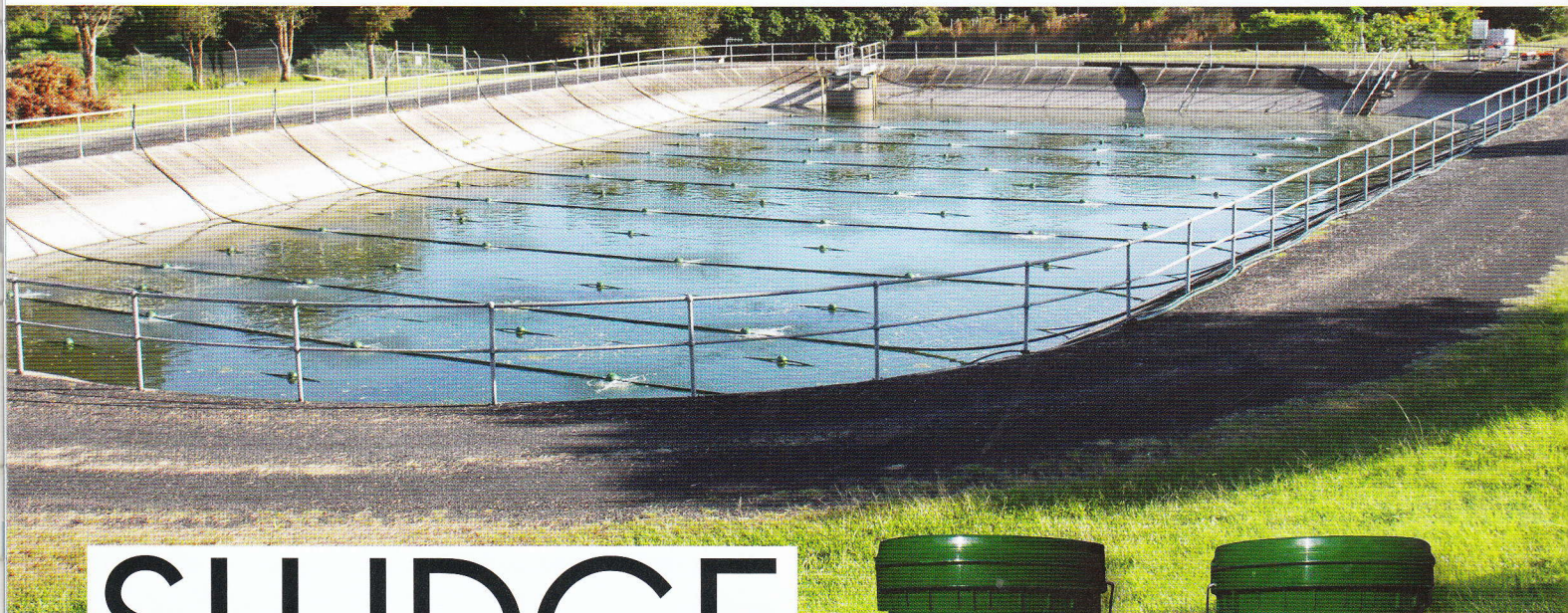




SLUDGE BUSTERS

Sluggish sludge is no longer a problem thanks to the introduction of probiotic bacteria to wastewater sludge ponds. By Max Pichon.

A few years ago, For Earth developed low energy sub-surface aeration systems to increase the biological activity in the wastewater sludge ponds. Then came the idea to introduce probiotic bacteria to really ramp up the process, which promises massive time and cost savings in sludge management.

Increasing the volumes of specific bacteria reactivates the sludge, accelerating biological nutrient removal in general and, by tailoring the bacteria, targeting specific organic waste types.

The technology is already running at more than 30 councils across NSW and in some commercial settings, such as dairy farms. Shane McKibbin, GM of For Earth, said the 'Probiotic, Low Energy Aeration System' offers considerable upside.

"The cost savings have been enormous with some councils,



including the work done at Woolgoolga Water Reclamation Plant at Coffs Harbour," he said.

Sludge settling in wastewater treatment plant lagoons is typically pumped out, centrifuged to remove water and then landfilled. In Woolgoolga's case that process was costing Coffs Harbour Water \$150 a cubic metre; McKibbin said they've slashed that to a measly \$5 a cubic metre.

An array of "industrial air stones" is dropped 1m below the surface to create an oxygenated blanket across the surface, overcoming the tendency of sludge ponds to stagnate. The key though is floating probiotic dosing lines across the surface, which kick-starts the probiotics process.

"Previously, some operators just wanted to throw it on with a bucket, so the bacteria would get thrown into one corner of the pond. But since we introduced the dosing system it has really improved the overall performance," said McKibbin.

The dosing pump system automatically applies the bacteria into

Prevent Overflows at Sewage Pump stations

One of the important environmental roles of engineers of sewage pumping stations is to prevent sewage overflows. A generator will assist if the problem is with the availability of power, but a permanently installed engine driven pump will not only operate during a "power outage", but will "protect" the pump station if any other failure at the station occurs (control panel failure, level control failure or even electric motor failure).

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Less Expensive

A pump is generally less expensive than a generator because it requires a much smaller engine than a generator does. It also does not require automatic switching gear, and does not need "load banks" to prevent diesel cylinders glazing during "non-pump" running time.

For more information on the best solution for preventing sewage overflows, drop us an email on sales@hydroinnovations.com.au or give us a call on 02 9647 2700

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FACT FILE: WEEKLY COST COMPARISON

	Traditional system	Probiotics
Electricity	Minimal	Minimal
Operator time	\$270 (10 hrs)	\$54 (2 hrs)
Sludge handling	\$2925 (39m ³)	\$1575 (21m ³)
Probiotics	Nil	\$150
Total	\$3195	\$1779

the dosing line according to a specified program, ensuring the probiotics are spread out across the pond and across the week. "I would say it improves and accelerates the result by 30 per cent," he adds.

Slashing sludge and costs

"The biggest problem was that Woolgoolga couldn't handle its sludge load as the sludge ponds fill up. And there is nowhere to take it, so they have to take it to landfill. That is a very expensive way of dealing with it," said McKibbin.

It was also a growing problem, with Coffs Harbour Water budgeting \$1.5 million to augment the sludge management system, including a third pond and centrifuge.

But having observed the For Earth system at the Macksville Sewage Treatment plant in Nambucca, the council water authority instead opted for a 12-month trial of the system, which started last August. The aeration system was installed and some four litres a day of probiotics has been added to the 16kL sludge lagoons since then.

Coffs Harbour Water's Adam Wilson is pleased with the results to date. The volume of sludge coming out of the ponds has plunged 47 per cent compared to the same period last year, solids concentration has dropped 61 per cent and the sludge dries in 10 days rather than 3-4 weeks.

There are still the coldest winter months to go, but McKibbin said that presents no problems.

"What happens is the cooler water temperatures will slow down the bacteria activity. But that's the beauty of adding probiotics bacteria, you can up the numbers and by doing that you're not held back by water temperature," he said.

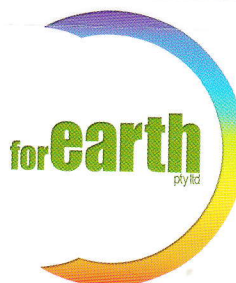
After the initial set up cost of \$22,000 and the \$150 a week in probiotics, the sludge management operating costs have reduced by \$1,416 per week, paying for the system in just 15 weeks. Operator time has been cut from 10 hours per week to two hours, but the biggest saving is more than halving the \$3,000 a week bill to dispose of the dried sludge.

Little wonder Coffs Harbour Water has already extended the use of probiotics and low energy aeration to three other water reclamation plants, though it stopped short of applying the technology to the Karangi Water Treatment Plant due to high concentrations of chemicals and the low biological content of its sludge.

More information at www.forearth.com.au

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